



Mount Rainier National Park

Sister Mountain Project

Citizen Science

Overview	Children are taught that they can't contribute much to society until they are adults—that is nonsense! We need to provide opportunities for our children to provide an immediate contribution to the land they love. The Citizen Science Team will conduct field surveys of toads and tadpoles in park lakes, ponds, and wetland areas. Volunteers will work under a trained field biologist in areas throughout the park. As a result children will see that they can make contributions to the field of science at a very young age and provide very valuable data to scientists while doing so!
Grade Level	5-12
Objectives	<ul style="list-style-type: none">• Students will join the Citizen Science Team.• Students will conduct field surveys under the supervision of trained field biologists.
Setting	Remote wilderness lakes and streams, as well as places near road access
Timeframe	6/25/2010--10/1/2010
Materials	<ul style="list-style-type: none">✓ Sturdy hiking boots✓ Backpack✓ Appropriate backcountry clothing
Vocabulary	Watershed, Wetland, Aquatic, Habitat
Standards	<p>6-8 INQA — Question— Scientific <i>inquiry</i> involves asking and answering <i>questions</i> and comparing the answer with what scientists already know about the world.</p> <p>6-8 INQB — Investigate— Different kinds of <i>questions</i> suggest different kinds of scientific <i>investigations</i></p> <p>6-8 INQC — Investigate— Collecting, analyzing, and displaying data are essential aspects of all <i>investigations</i>.</p> <p>6-8 INQG — Communicate Clearly— Scientific reports should enable another investigator to repeat the study to check the results.</p> <p>6-8 INQH — Intellectual Honestly— <i>Science</i> advances through openness to new <i>ideas</i>, honesty, and legitimate <i>skepticism</i>. Asking thoughtful <i>questions</i>, querying other scientists' explanations, and evaluating one's own thinking in response to the <i>ideas</i> of others are abilities of scientific <i>inquiry</i>.</p> <p>6-8 INQI — Consider Ethics— Scientists and engineers have ethical codes governing</p>

	<p>animal <i>experiments</i>, research in natural <i>ecosystems</i>, and studies that involve human subjects.</p> <p>6-8 APPC <i>Science</i> and <i>technology</i> are interdependent. <i>Science</i> drives <i>technology</i> by demanding better instruments and suggesting <i>ideas</i> for new designs. <i>Technology</i> drives <i>science</i> by providing instruments and research methods.</p> <p>6-8 APPD The process of <i>technological design</i> begins by defining a problem and identifying <i>criteria</i> for a successful <i>solution</i>, followed by research to better understand the problem and brainstorming to arrive at potential <i>solutions</i>.</p> <p>6-8 APPF <i>Solutions</i> must be tested to determine whether or not they will solve the problem. Results are used to modify the <i>design</i>, and the best solution must be communicated persuasively.</p> <p>6-8 APPG The benefits of science and technology are not available to all the people in the world.</p> <p>6-8 APPH People in all <i>cultures</i> have made and continue to make contributions to society through <i>science</i> and <i>technology</i>.</p> <p>6-8 LS2E <i>Investigations</i> of <i>environmental</i> issues should uncover <i>factors</i> causing the problem and relevant scientific <i>concepts</i> and findings that may inform an <i>analysis</i> of different ways to address the issue.</p>
Background	<p>Every year, hundreds of individuals contribute their enthusiasm and skills to help the National Park Service preserve and protect its natural and cultural resources, and to serve and educate its visitors. Volunteers help in almost every area of the park, from maintaining trails to leading guided hikes. The time commitment for volunteer work varies from one-day projects to recurring projects or full-time work extending over months or years. Both individuals and organized groups are welcome to volunteer, and opportunities are available both for highly skilled professionals and for families with little or no experience in land management.</p> <p>Consider joining our team! Your contribution of time and energy will help us to protect the magnificent natural and cultural areas entrusted to us, and you'll go home with a sense of pride at having participated in something worthwhile. Mount Rainier is <i>your</i> national park!</p> <p>The Citizen Science program is looking for several dedicated individuals to form a Citizen Science Team this summer, conducting field surveys of toads and tadpoles in park lakes, ponds, and wetland areas. Volunteers will work under a trained field biologist in areas throughout the park, including remote wilderness as well as places near road access.</p> <p>The Citizen Science Team may assist with other projects as well, including wetland surveys, soundscape monitoring, archeological surveys, wildlife surveys, and habitat monitoring.</p>

	For more information, please contact Volunteer Program Manager Kevin Bacher at 360-569-2211 ext. 3385 or Kevin_Bacher@nps.gov; or Park Biologist Barbara Samora at 360-569-2211 ext. 3372.
Procedure	Procedure: <ol style="list-style-type: none"> 1. Visit the National Parks Volunteer website at: http://www.volunteer.gov/gov/results.cfm?ID=9535 2. Contact: Kevin Bacher kevin_bacher@nps.gov 360-569-2211 3. Make appropriate accommodations and prepare for an exciting time volunteering in the park under trained field biologist!
Suggested Assessment	<ul style="list-style-type: none"> • Students can take digital photos of volunteer project and create a multi-media presentation of what they learned and what they plan to do with this experience.
Adaptations	There are numerous other volunteer opportunities to volunteer at Mount Rainier National Park. Volunteers can work on trail restoration, invasive plant removal, and many other jobs. Please visit http://www.volunteer.gov
Extensions	Conduct the activity <i>Improving Your Place</i> with your class
References/ Resources	<p><i>Project Learning Tree: Pre K-8 Environmental Education Activity Guide</i>. Washington, D.C.: American Forest Foundation Center for Environmental Learning, 2009. Print</p> <p><i>Project WILD: K-12 Curriculum & Activity Guide</i>. Houston, TX: Project WILD National Office, 2008. Print</p>